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Art unit 3749
Examiner S. Gravini

REMARKS/ARGUMENTS

Claim amendment

Claim 1 is amended to incorporate limitations from claim 3, now cancelled.

Claim 4 is amended consequentially to the amendment of claim 1.

Claims 7 and 10 are amended to specify when the drying occurs and, in claim 10, that a dry powder is formed.

Claims 15-18 are amended to relax the requirement that the injection system require a nozzle. A change to claim 15 is also made for consistent reference to liquid droplets.

New claims 21-28 are added to more completely claim the invention disclosed.

Minor amendments to form are made to claims 1, 5, 8, 10 and 12.

Interview summary – first interview

The applicants and the agent of record, undersigned, participated in a telephone conference with the examiner on October 21, 2004. The applicants thank the examiner for the courtesy of the telephone interview and the time taken to discuss the references, but observe that the interview summary by the examiner requires clarification. As a preliminary matter, the date of the interview was not January 21, 2004 as indicated by the examiner in the examiner's interview summary, but was October 21, 2004.

Claim 1 was discussed in relation to reference C1. The examiner agreed that an amendment to claim 1 to incorporate the limitations of claim 3 would overcome this rejection since reference C1 does not show concurrent flow of carrier liquid and flow of coolant.

Claim 10 was discussed in relation to the Passey patent. No agreement was reached during the telephone call, but there was discussion of an amendment that would distinguish the Passey reference by clarifying that the step of drying was carried out after deposition of the liquid droplets.

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Claim 18 was discussed in relation to the Soltani patent. No agreement was reached during the telephone call. The applicants argued that Soltani clearly did not show the limitations of claim 18.

Interview summary – second interview

The undersigned agent of record engaged in a telephone interview with the examiner on November 15, 2004. Claim 15 was discussed in relation to the Passey reference. The undersigned pointed out differences between Passey and what was claimed, as set forward in more detail below. The undersigned does not recall a conclusion being reached on the patentability of the language of claim 15 over Passey. However, the undersigned does not disagree with the examiner's overall conclusion in the examiner's interview summary.

Priority

To complete the claim for priority, applicants note that the Canadian application from which priority is claimed is Canadian application no. 2,450,779, and have attached hereto a signed declaration referring to that application by number. A certified copy of the priority application will be submitted upon allowance.

Claims 1-3 and 8 have been rejected under 35 USC 102(b) as being anticipated by reference C1. Applicants respectfully traverse this rejection.

Reference C1 fails to disclose entraining of the flow of liquid droplets. In reference C1, liquid is sprayed from downward facing nozzle 2 against a flow of cold gas from an opening in the bottom conical end of the chamber (shown in Fig. 4 and discussed at middle of right column of page 115). Practicalities of this approach cause problems for the method of C1, which it is noted was first proposed in the patent cited by the applicants as reference A3, some 16 years previously. An overflow of gas from the bottom conical end of the chamber will freeze the sprayed liquid onto the nozzle 2, while an underflow will result in freezing against the walls of the chamber. The practical problems are alluded to in reference C1 in which at page 113, right column, line 4-10, it is stated: "Thus, an extremely wet powder (i.e. frozen powder), which is very cohesive, cannot be fluidized. In such a case, a pretreatment by vacuum drying of the

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material on the bottom plate of the product chamber would be the method of choice and emphasizes again the combination of the vacuum drying with a fluidized-bed-drying process". In the fluidized bed approach, the particles are subject to vibrations or oscillations to attempt to avoid clumping. As the examiner can imagine, reference C1 yields a product that clumps in the bottom conical end of the chamber while cold drying air flows around the clumps.

These problems are avoided in the present invention as claimed in claim 1 by entraining the liquid droplets within a concurrent flow of liquid that freezes the liquid droplets prior to deposition. As noted in the instant disclosure in paragraph 14, "Entraining by the cooling gas provides for confining the spray, and immediate freezing of the individual spray droplets, so that the liquid spray droplets do not impact on the walls of the chamber in which the process is carried out." While applicants believe that the reference to entrainment is sufficient to distinguish reference C1 without requiring the reference to "concurrent" flow, following the telephone interview the applicants have included the reference to "concurrent" to satisfy the examiner's concerns.

Claims 4-7 and 9 have been rejected under 35 USC 103 as being unpatentable over reference C1 in view of Soltani. Applicants respectfully traverse this rejection. Reference C1 is irrelevant for the reasons given above. Soltani is irrelevant for the reasons given below in relation to claim 15. Neither reference alone or in combination yields the features of claims 4-7 and 9.

Claims 10-14 have been rejected under 35 USC 102(b) as being anticipated by Passey. Applicants respectfully traverse this rejection.

In Passey, at col. 14, lines 33-37, it is stated: "The atomized material freezes almost instantly due to the prevailing vacuum conditions compatible with freeze-drying and the frozen particles can remain in the drying chamber until dried to the desired moisture content while they are still in suspension and settling." Hence, in Passey, due to the vacuum condition, the particles both freeze and dry prior to settling. In the present invention, as claimed in claim 10, the liquid droplets are frozen prior to deposition, and are dried after deposition. This clearly distinguishes Passey.

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Claims 15-20 have been rejected under 35 USC 102 as being anticipated by Soltani. Applicants respectfully traverse this rejection.


Soltani is directed to a process for preparation of a double metal cyanide complex catalyst that requires, in part, preparation of a slurry of particles following by drying of the particles by a non-agglomerative drying method (claim 1). A first embodiment of a drying method is described in relation to Fig. 1 and described at col. 7, line 64 to col. 8, line 41. In this drying method, liquid droplets are sprayed from nozzle 15, while heating gas is supplied from nozzles 18. A cooling device 28 is used to recover the particle carrier fluid (col. 8, lines 22-25).

A freeze-drying process is also discussed at col. 8, lines 42-65, but it is taught as an alternative to the heating drying described in relation to Fig. 1. Soltani states at col. 8, line 42: "Freeze drying is a further non-agglomerative means of drying catalyst..." In other words, the apparatus of Fig. 1 and conventional freeze drying are alternative methods of achieving the second process step of Soltani's claim 1. Freeze drying has nothing to do with Fig. 1. The action of the examiner therefore appears to be incorrect when he states that the nozzle system 15 provides a flow of coolant, and when he states that the item 28 is a source of coolant for the nozzle system 15. Soltani does not state that the nozzle system 15 provides a flow of coolant, and if he had arranged that, would have frozen his nozzle and rendered it inoperative. Further, the nozzles 18 provide a heating fluid since Fig. 1 is all to do with heated drying.

Claims 15-20 are therefore patentable without amendment.

The features of the dependent claims also distinguish the cited references, but are not required to be discussed in detail due to the clear distinctions in the independent claims.

Reconsideration and withdrawal of the rejections, and allowance of the claims, is respectfully requested. Respectfully submitted, and certified as being faxed to the USPTO on December 7/04 (9 page response plus declaration plus extra copy of page 1 for fee payment).


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